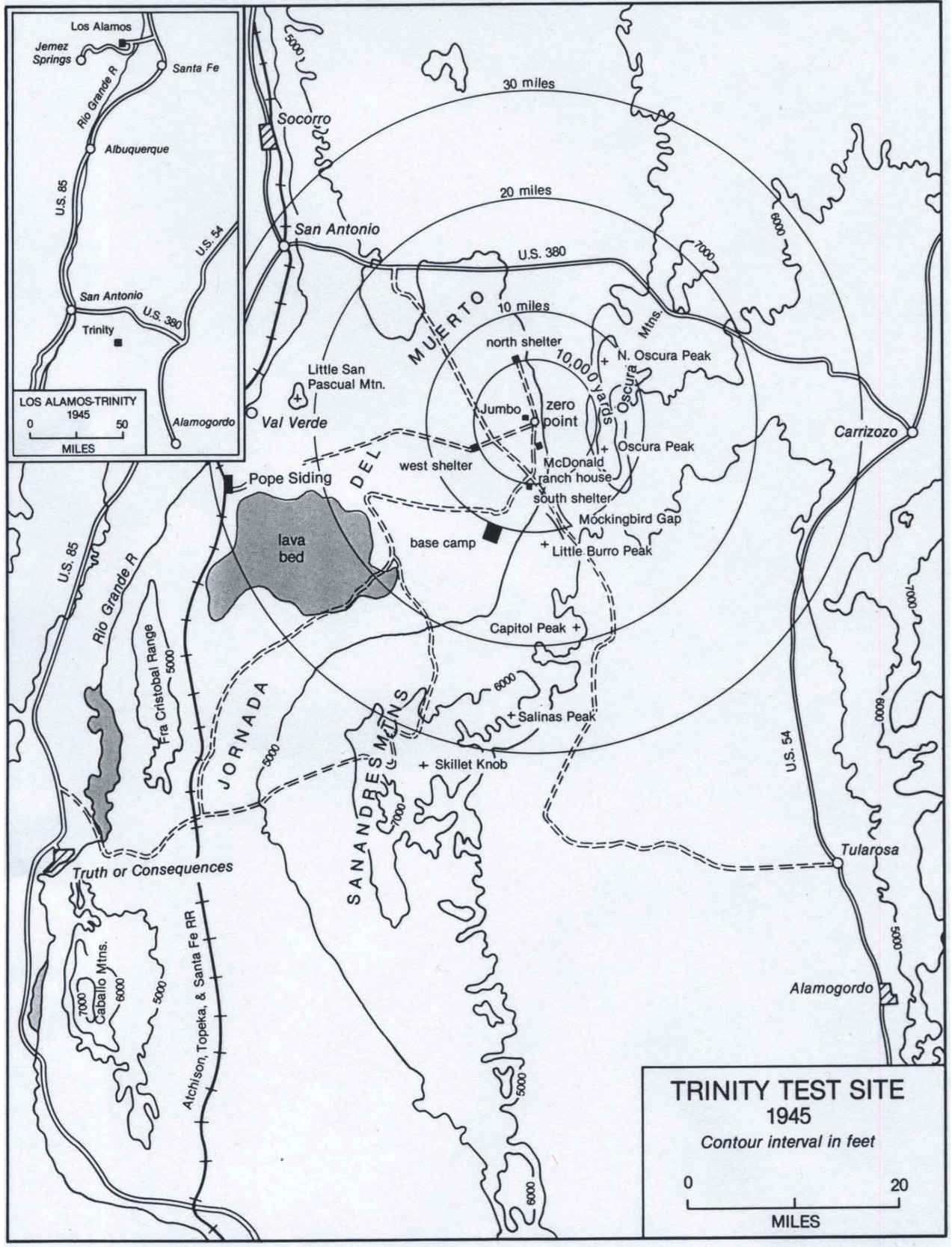

ARMY
E
NAVY


TRINITY SITE
WHERE
THE WORLDS FIRST
NUCLEAR DEVICE
WAS EXPLODED ON
JULY 16 1945


Los Alamos
Jemez Springs
Santa Fe
Rio Grande R
Albuquerque
U.S. 85
U.S. 54
San Antonio
U.S. 380
Trinity
LOS ALAMOS-TRINITY
1945
0
50
MILES
Alamogordo
30 miles
20 miles
10 miles
10,000 yards
Socorro
San Antonio
U.S. 380
5000
6000
7000
MUERTO
DEL
north shelter
N. Oscura Peak
Oscura Mtns.
Little San Pascual Mtn.
Val Verde
Jumbo
zero point
Oscura Peak
Carrizozo
west shelter
McDonald ranch house
south shelter
Mockingbird Gap
Pope Siding
lava bed
base camp
Little Burro Peak
Capitol Peak
Salinas Peak
Skillet Knob
JORNADA
SANANDRES MTNS
U.S. 54
Tularosa
Truth or Consequences
Caballo Mtns.
Fra Cristobal Range
Atchison, Topeka, & Santa Fe RR
Alamogordo
TRINITY TEST SITE
1945
Contour interval in feet
0
20
MILES

LA-UR-03372

5 July 1945

Directions for Personnel at Base Camp at Time of Shot

1. Do not leave the main group at the camp where there will be monitoring and evacuation facilities. There will also be contact by radio with the planes, the shelters, and area monitors.

2. No one should remain in camp who can view the show from the mountains to the north and then leave immediately for Site Y. A minimum number of vehicles should be taken away from camp.

3. Persons will not be permitted to leave along Broadway until all danger of contamination has passed and the monitors have declared it safe. This may take several hours.

4. We do not expect danger to the Base Camp, but all personnel will conform with the following Safety Regulations:

   (a) At a short signal of the siren at minus (-) 5 minutes all personnel whose duties do not specifically require otherwise, will prepare to face the south, looking in the direction parallel to the long axis of the barracks buildings.

   (b) At a long signal of the siren at minus (-) 2 minutes all personnel whose duties do not specifically require otherwise, will lie prone on the ground or in an earthern depression, the face and eyes directed toward the south.

   (c) After the south hills light up, one may look toward zero with the eyes covered by a welder's filter, which will be issued to camp personnel by Fubar's supply room.

   (d) Do not arise before the blast wave arrives, which takes about 50 seconds.

   (e) At two (2) short blasts of the siren, indicating the passing of all hazard from light and blast, all personnel will "carry-on" thereafter conforming with such directions as may be announced over the loud speaker.

5. In event that evacuation becomes necessary, directions for this action will be broadcast on the loud speaker and carried out in orderly fashion according to prepared plans.

6. Any possible hazard from ultra-violent light injuries to the skin is best overcome by wearing long trousers and shirts with long sleeves.

Howard C. Buse
First Lieutenant, CMP
Camp Commander


STOP
AT GUARD STATION
FOR IDENTIFICATION
AND CLEARANCE
TR 422

My Observations During the Explosion at Trinity on July 16, 1945 — E. Fermi

On the morning of the 16th of July, I was stationed at the Base Camp at Trinity in a position about ten miles from the site of the explosion.

The explosion took place at about 5:30 A.M. I had my face protected by a large board in which a piece of dark welding glass had been inserted. My first impression of the explosion was the very intense flash of light, and a sensation of heat on the parts of my body that were exposed. Although I did not look directly towards the object, I had the impression that suddenly the countryside became brighter than in full daylight. I subsequently looked in the direction of the explosion through the dark glass and could see something that looked like a conglomeration of flames that promptly started rising. After a few seconds the rising flames lost their brightness and appeared as a huge pillar of smoke with an expanded head like a gigantic mushroom that rose rapidly beyond the clouds probably to a height of the order of 30,000 feet. After reaching its full height, the smoke stayed stationary for a while before the wind started dispersing it.

About 40 seconds after the explosion the air blast reached me. I tried to estimate its strength by dropping from about six feet small pieces of paper before, during and after the passage of the blast wave. Since, at the time, there was no wind I could observe very distinctly and actually measure the displacement of the pieces of paper that were in the process of falling while the blast was passing. The shift was about 2½ meters, which, at the time, I estimated to correspond to the blast that would be produced by ten thousand tons of T.N.T.

It is with appreciation and gratefulness
that I accept from you this scroll
for the Los Alamos Laboratory, and for the men and women
whose work and whose hearts have made it.
It is our hope that in years to come we may look at the scroll
and all that it signifies, with pride.

Today that pride must be tempered by a profound concern.
If atomic bombs are to be added as new weapons
to the arsenals of a warring world,
or to the arsenals of the nations preparing for war,
then the time will come when mankind will curse
the names of Los Alamos and Hiroshima.

The people of this world must unite or they will perish.
This war that has ravaged so much of the earth, has written these words.
The atomic bomb has spelled them out for all men to understand.
Other men have spoken them in other times,
and of other wars, of other weapons.
They have not prevailed.
There are some misled by a false sense of human history,
who hold that they will not prevail today.
It is not for us to believe that.
By our minds we are committed, committed to a world united,
before the common peril, in law and in humanity.

J. Robert Oppenheimer
Acceptance Speech, Army-Navy "Excellence" Award
November 16, 1945

~~SECRET~~ THIS DOCUMENT CONSISTS OF 1 PAGE(S)
NO 4 OF 11 COPIES, SERIES A

Notes, written at t_o + approximately 2 hours, on visual observation of the gadget shot from Carrizozo.

UNCLASSIFIED CLASSIFICATION CANCELLED PER DOC REVIEW JAN. 1973

E. R. Graves

Turned on Leet meter -1 sec approx. At t_o sky lit up white.

At t +1 sec may have shaken floor ducking due to being blinded.

Sky turned to brilliant red and faded in about 4 sec :2 smoke puffs blew up at about 4-5 sec. rapidly into sky -- then more slowly rose fiery smoke cloud which faded to pink in several seconds.

At about 10 sec. (maybe 15) there were 2 lightning flashes, sort of white, illuminated the cloud which was rising all the time.

At 2 min 38 seconds air shock arrived--blew healthy puff in the window into our faces and simultaneously the noise arrived which rumbled (echoes?) about like a medium thunder.

A. C. Graves

Saw an extremly bright flash of dazzling white light seeming to cover the entire sky visable to me thru the window. This changed almost at once to yellow and deep red. The phase lasted several seconds. Then the sky darkened and about three rings or puffs of fiery red appeared over the mountain. These were like smoke rings. Finally a pillar of luminous reddish smoke appeared. This seemed a brighter red than the smoke rings. This all took about five seconds or more. After most of the illumination was gone and there remained only a cloud of pinkish colored smoke, there were two and probably three fairly bright flashes of light (like heat lightning) about +15 seconds.

Addendum, July 24, 1945

The radio reception of WTX3, WTX2, 384 and 385 was poor due to the BBC on one side and Voice of America on the other side, both very close. Announcements were understandable, the last heard by S.K.A. being -10 sec. There was no noticeable disturbance at t_o other than the ordinary static which was rather bad all the time. Neither A.C.G. or E.R.G. heard any extra disturbance.

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FINAL DETERMINATION
UNCLASSIFIED
L. M. Redman
NOV 19, 1980

VERIFIED UNCLASSIFIED
LANL 5/28/81 (BB) 5/30/85 CLASSIFICATION CANCELLED PER DOC REVIEW JAN. 1973

UNCLASSIFIED

PUBLICLY RELEASABLE
LANL Classification Group

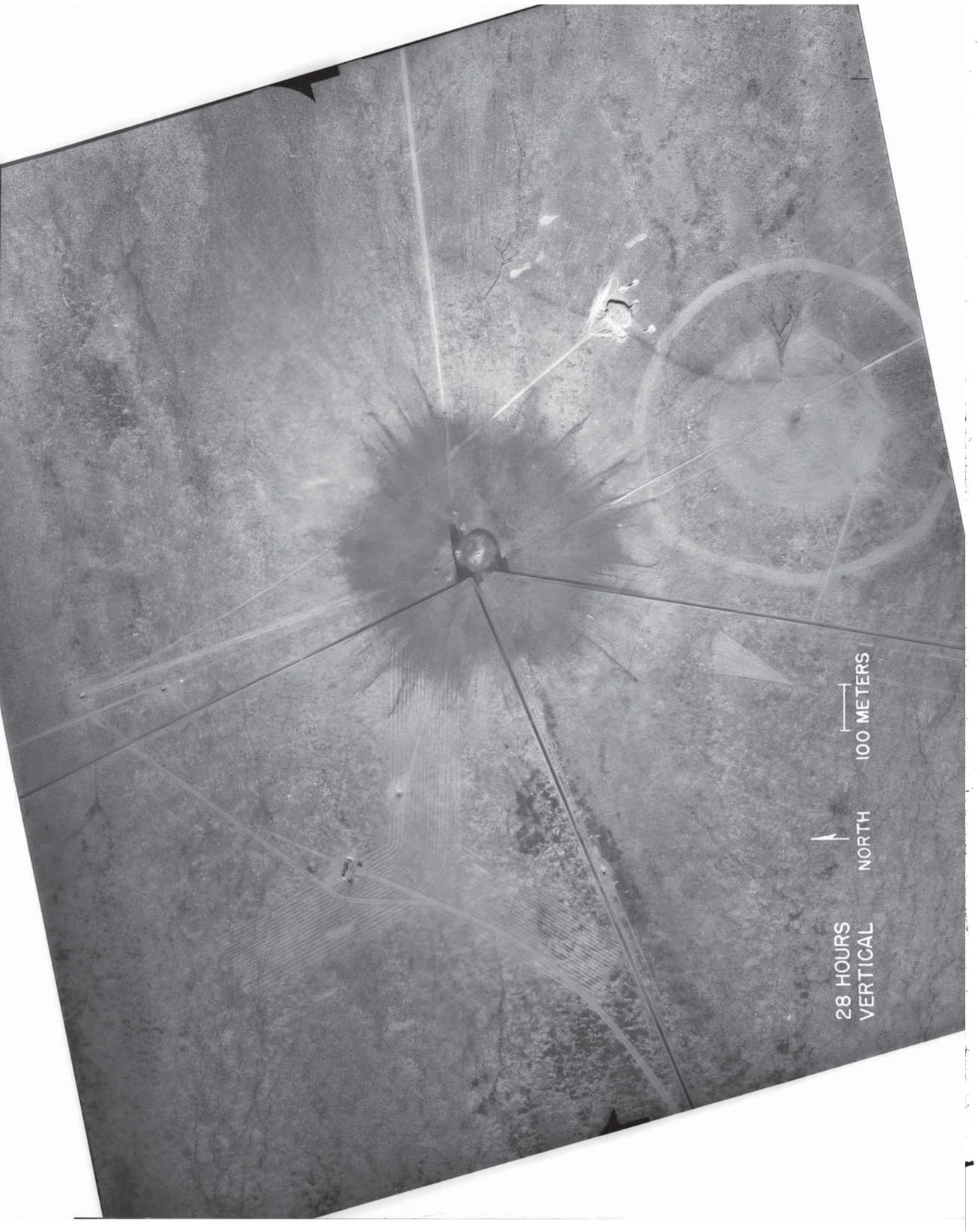
last few seconds, he stared directly ahead and then when the announcer shouted "Now!" and there came this tremendous burst of light followed shortly thereafter by the deep growling roar of the explosion, his face relaxed into an expression of tremendous relief. Several of the observers standing back of the shelter to watch the lighting effects were knocked flat by the blast.

"The tension in the room let up and all started congratualting each other. Everyone sensed "This is it!". No matter what might happen now all knew that the impossible scientific job had been done. Atomic fission would no longer be hidden in the cloisters of the theoretical physicists' dreams. It was almost full grown at birth. It was a great new force to be used for good or for evil. There was a feeling in that shelter that those concerned with its nativity should dedicate their lives to the mission that it would always be used for good and never for evil.

"Dr. Kistiakowsky threw his arms around Dr. Oppenheimer and embraced him with shouts of glee. Others were equally enthusiastic. All the pent-up emotions were released in those few minutes and all seemed to sense immediately that the explosion had far exceeded the most optimistic expectations and wildest hopes of the scientists. All seemed to feel that they had been present at the birth of a new age--The Age of Atomic Energy--and felt their profound responsibility to help in guiding into right channels the tremendous forces which had been unlocked for the first time in history.

"As to the present war, there was a feeling that no matter what else might happen, we now had the means to insure its speedy conclusion and save thousands of American lives. As to the future, there had been brought into being something big and something new that would prove to be immeasurably more important than the discovery of electricity or any of the other great discoveries which have so affected our existence.

"The effects could well be called unprecedented, magnificent, beautiful, stupendous and terrifying. No man-made phenomenon of such tremendous power had ever occurred before. The lighting effects beggared description. The whole country was lighted by a searing light with the intensity many times that of the midday sun. It was golden, purple, violet, gray and blue. It lighted every peak, crevasse and ridge of the nearby mountain range with a clarity and beauty that cannot be described but must be seen to be imagined. It was that beauty the great poets dream about but describe most poorly and inadequately. Thirty seconds after, the explosion came first, the air blast pressing hard against the people and things, to be followed almost immediately by the strong, sustained, awesome roar which warned of doomsday and made us feel that we puny things were blasphemous to dare tamper with the forces heretofore reserved to The Almighty. Words are inadequate tools for the job of acquainting those not present with the physical, mental and psychological effects. It had to be witnessed to be realized."



2 4 A

27 July 1945.

Lt. Taylor, USA

Captain Larkin, USN

Description of Trinity Test, as Observed From Coordinating Council Area

1. The area assigned to the Coordinating Council, from which I observed the Trinity Test Shot, was understood to be approximately 20 miles from point of detonation. The intervening landscape was quite flat, and a clear but distant view of the explosion was possible.

2. At the moment of detonation I was seated on the ground facing in the general direction of the test setup, with my eyes fixed on the ground immediately in front. This I did deliberately, in order to avoid the blinding flash which I expected at the instant of detonation.

3. My first impression was of sudden brilliant lighting of the surrounding landscape, accompanied by a momentary flash of heat. I remember a feeling of surprise as the illumination, initially quite brilliant, continued to increase for a brief interval. After raising the dark filter to protect my eyes, I looked in the direction of the light. Although the filter provided was designed to eliminate over 99% of the light, the intensity of illumination was such that there was a momentary sensation of blinding, similar to that following a close flash of lightning on a dark night.

4. Within perhaps two seconds after the initial flash, it became possible to distinguish details of the explosion without the use of the filter. A ball of light about three or four hundred yards in diameter, was clearly evident about a thousand feet above the ground. Beneath this ball there appeared to be a column of red flame about 150 or 200 yards in diameter. Flickering red reflections were distinctly seen on the clouds above the ball of light.

5. As the intensity of light diminished, a smokey, grayish-brown ball took shape. It was noted that a fringe of violet light surrounded this ball and that the ball was rising rapidly, with some increase in diameter. The column beneath the ball darkened until it appeared to be a dense black pillar under the grayish-brown ball. At about ten seconds after detonation, the top of the ball seemed to flatten, and the ball and column took on the shape of a vast mushroom.

6. Close to the ground and slowly spreading out on all sides from the point of detonation, was a white cloud which looked much like ground fog. This cloud, I assumed, was composed of dust raised by the blast wave. The maximum diameter of this cloud I estimated to be about two miles.

column and finally was sent in several directions by the variable winds at the different elevations.

"Dr. Conant reached over and we shook hands in mutual congratulations. Dr. Bush, who was on the other side of me, did likewise. The feeling of the entire assembly, even the uninitiated, was of profound awe. Drs. Conant and Bush and myself were struck by an even stronger feeling that the faith of those who had been responsible for the initiation and the carrying on of this Herculean project had been justified".

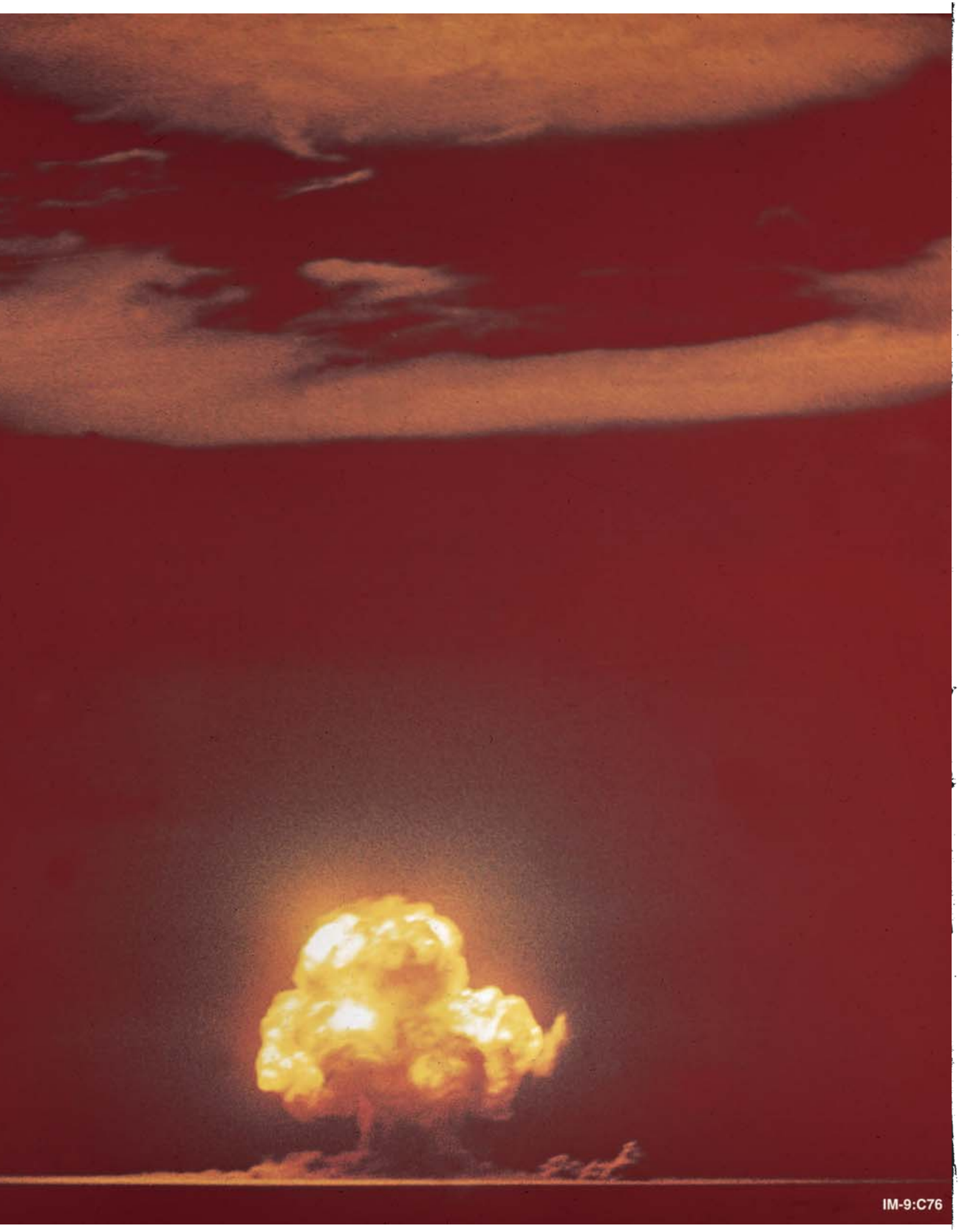
General Farrell's impressions are: "The scene inside the shelter was dramatic beyond words. In and around the shelter were some twenty odd people concerned with last minute arrangements. Included were Dr. Oppenheimer, the Director who had borne the great scientific burden of developing the weapon from the raw materials made in Tennessee and Washington, and a dozen of his key assistants, Dr. Kistiakowsky, Dr. Bainbridge, who supervised all the detailed arrangements for the test; the weather expert, and several others. Besides those, there were a handful of soldiers, two or three Army officers and one Naval Officer. The shelter was filled with a great variety of instruments and radios.

"For some hectic two hours preceding the blast, General Groves stayed with the Director. Twenty minutes before the zero hour, General Groves left for his station at the base camp, first because it provided a better observation point and second, because of our rule that he and I must not be together in situations where there is an element of danger which existed at both points.

"Just after General Groves left, announcements began to be broadcast of the interval remaining before the blast to the other groups participating in and observing the test. As the time interval grew smaller and changed from minutes to seconds, the tension increased by leaps and bounds. Everyone in that room knew the awful potentialities of the thing that they thought was about to happen. The scientists felt that their figuring must be right and that the bomb had to go off but there was in everyone's mind a strong measure of doubt.

"We were reaching into the unknown and we did not know what might come of it. It can safely be said that most of those present were praying and praying harder than they had ever prayed before. If the shot were successful, it was a justification of the several years of intensive effort of tons of thousands of people -- statesmen, scientists, engineers, manufacturers, soldiers, and many others in every walk of life.

"In that brief instant in the remote New Mexico desert, the tremendous effort of the brains and brawn of all these people came suddenly and startlingly to the fullest fruition. Dr. Oppenheimer, on whom had rested a very heavy burden, grew tenser as the last seconds ticked off. He scarcely breathed. He held on to a post to steady himself. For the



7. The sound wave when it reached my position, was unexpectedly sharp. I would describe the sound as being similar to the crack of thunder following a near stroke of lightning. It was sharper and lacked the booming sound of a large gun firing. There was no perceptible earth shock felt at any time.

8. Ten minutes after the detonation the mushroom-like cloud was still quite distinct and rising rapidly, with very little tendency towards dissipating horizontally. About fifteen minutes after the explosion, the pillar under the cloud had faded. The cloud, now a light brownish color, began to fade. The cloud faded from view at about thirty minutes after the explosion.

RAL/hg

R. A. Larkin
Captain, USN

cc: Oppenheimer

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UNCLASSIFIED

Classification changed to UNCLASSIFIED
by authority of the U. S. Atomic Energy Commission,
Per K. D. Krohn 1-31-73
(Person authorizing change in classification) (Date)
By H. R. Blamfield 4-3-75
(Signature of person making the change, and date)

CLASSIFICATION CANCELLED
PER DOC REVIEW JAN. 1973

UNCLASSIFIED

Japan today in the first military use of the atomic bomb.

Had it not been for the desolated area where the test was held and for the cooperation of the press in the area, it is certain that the test itself would have attracted far reaching attention. As it was, many people in that area are still discussing the effect of the smash. A significant aspect, recorded by the press, was the experience of a blind girl near Albuquerque many miles from the scene, who, when the flash of the test lighted the sky before the explosion could be heard, exclaimed, "what was that?"

Interviews of General Groves and General Farrell give the following on-the-scene versions of the test. General Groves said: "My impressions of the night's high points follow: After about an hour's sleep I got up at 0100 and from that time on until about five I was with Dr. Oppenheimer constantly. Naturally he was tense, although his mind was working at its usual extraordinary efficiency. I attempted to shield him from the evident concern shown by many of his assistants who were disturbed by the uncertain weather conditions. By 0330 we decided that we could probably fire at 0530. By 0400 the rain had stopped but the sky was heavily overcast. Our decision became firmer as time went on.

"During most of these hours the two of us journeyed from the control house out into the darkness to look at the stars and to assure each other that the one or two visible stars were becoming brighter. At 0510 I left Dr. Oppenheimer and returned to the main observation point which was 17,000 yards from the point of explosion. In accordance with our orders I found all personnel not otherwise occupied massed on a bit of high ground.

"Two minutes before the scheduled firing time, all persons lay face down with their feet pointing towards the explosion. As the remaining time was called from the loud speaker from the 10,000 yard control station there was complete awesome silence. Dr. Conant said he had never imagined seconds could be so long. Most of the individuals in accordance with orders shielded their eyes in one way or another.

"First came the burst of light of a brilliance beyond any comparison. We all rolled over and looked through dark glasses at the ball of fire. About forty seconds later came the shock wave followed by the sound, neither of which seemed startling after our complete astonishment at the extraordinary lighting intensity.

"A massive cloud was formed which surged and billowed upward with tremendous power, reaching the substratosphere in about five minutes.

"Two supplementary explosions of minor effect other than the lighting occurred in the cloud shortly after the main explosion.

"The cloud traveled to a great height first in the form of a ball, then mushroomed, then changed into a long trailing chimney-shaped

CIC-9: 653994

INTER-OFFICE MEMORANDUM

UNCLASSIFIED

DATE 5 September 1945

PUBLICLY RELEASABLE
LANL Classification Group
(15)
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TO: File

FROM: Ralph Carlisle Smith

SUBJECT: Comments on Trinty Test Shot Trip.

At about 1945 MWT, 15 July 1945, the coordinating council started from the Los Alamos Technical Area, riding in a three bus convoy with three G. I. sedans driven by Convoy Commander Captain George Turner, Mr. David Dow, and Dr. Earl Long and with a G. I. truck carrying spare equipment. The first stop was at the Camel on the Santa Fe Road. Then through back road of Santa Fe to outskirts of Albuquerque where we stopped twenty minutes for convoy to be reassembled. The truck had broken down and the sedans had stopped to get passengers at Santa Fe (Dr. C. A. Thomas).

We then proceeded to Wilson's garage to get gas, remaining in Albuquerque for about 45 minutes -- the passengers wandering about town. At the Hilton, Sir James Chadwick, William Laurence, William Fowler, Tom Lauritsen, Charles Lauritsen, Major Ackerman, and an Army Captain (S-2) awaited the convoy. 2nd Lt. Dazzo (S-2) was there but was returning to Los Alamos.

We proceeded to Trinity (just beyond San Antonio, N. Mex) on Route U. S. 385 at a turn off marked Harriets Ranch. We were first stopped at the bivouac of Major T. O. Palmer's Special Detachment of Engineers, who were stationed there for any emergency such as evacuation of personnel. After a brief check we proceeded to the Military Police Post No. 2 which was about 20 miles from zero point and about ten miles from the Trinity Base Camp. This was approximately 0200 to 0230 16 July 1945. About 0500 the searchlights allegedly at 6 miles from zero point started playing about, apparently fixing cloud elevation. At about 0520, the warning came by radio that the test was about to take place in 10 minutes. 1st Lt. Schaeffer, a civilian, and I stretched out on a blanket facing south to the spot where theseveral searchlights seemed to be focusing on the ground. A glow was appearing in the sky toward the East so that the mountain range stood out quite distinctly. The road was to our right and the buses to the rear of us. It was bright enough that you could identify people several hundred feet away. 1st Lt. Huene fired a rocket at minus six minutes and again at minus three. The latter did not explode in the air, hence another rocket went up about minus one minute. About then you could hear the warning siren at the bivouac area. I was staring straight ahead with my open left eye covered by a welders glass and my right eye remaining open and uncovered. Suddenly, my right eye was blinded by a light which appeared instantaneously all about without any build up of intensity. My left eye could see the ball of fire start up like a tremendous bubble or nob-like mushroom. I dropped the glass from

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Classification changed to Unc
by authority of the U. S. Atomic Energy Commission,
L Hedman 6/9/54
(Person authorizing change in classification) (Date)
By Chas McAndrew 6/9/54
(Signature of person making the change, and date)

Form 25

Development and Dr. James B. Conant, president of Harvard University.

Actual detonation was in charge of Dr. K. T. Bainbridge of Massachusetts Institute of Technology. He and Lieutenant Bush, in charge of the Military Police Detachment, were the last men to inspect the tower with its cosmic bomb.

At three o'clock in the morning the party moved forward to the control station. General Groves and Dr. Oppenheimer consulted with the weathermen. The decision was made to go ahead with the test despite the lack of assurance of favorable weather. The time was set for 5:30 A.M.

General Groves rejoined Dr. Conant and Dr. Bush and just before the test time, they joined the many scientists gathered at the Base Camp. Here all present were ordered to lie on the ground, face downward, heads away from the blast direction.

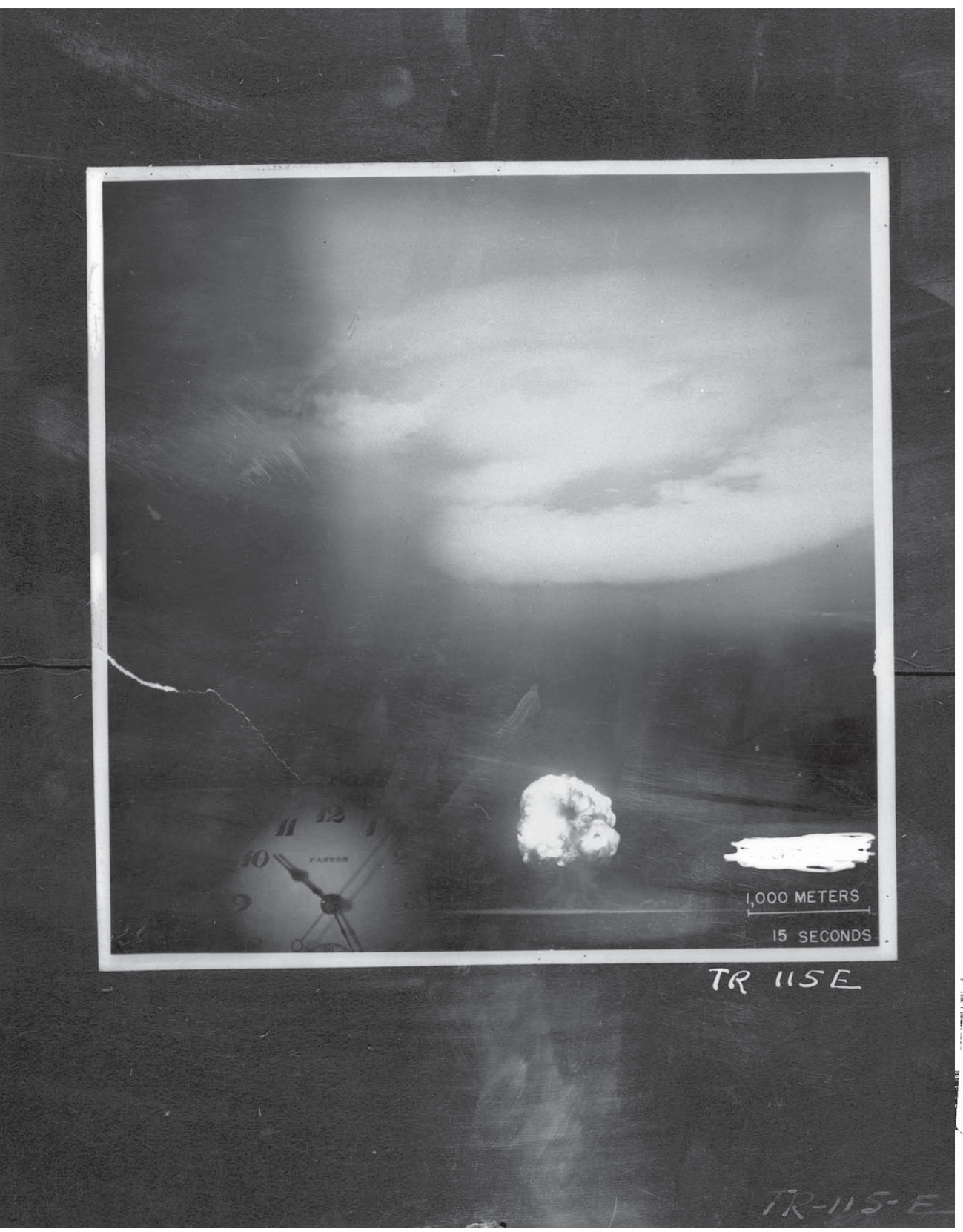
Tension reached a tremendous pitch in the control room as the deadline approached. The several observation points in the area were tied in to the control room by radio and with 20 minutes to go, Dr. S. K. Allison of Chicago University took over the radio net and made periodic time announcements.

The time signals, "minus 20 minutes, minus fifteen minutes", and on and on increased the tension to the breaking point as the group in the control room which included Dr. Oppenheimer and General Farrell held their breaths, all praying with the intensity of the moment which will live forever with each man who was there. At "minus 45 seconds", robot mechanism took over and from that point on the whole great complicated mass of intricate mechanism was in operation without human control. Stationed at a reserve switch, however, was a soldier scientist ready to attempt to stop the explosion should the order be issued. The order never came.

At the appointed time, there was a blinding flash lighting up the whole area brighter than the brightest daylight. A mountain range three miles from the observation point stood out in bold relief. Then came a tremendous sustained roar and a heavy pressure wave which knocked down two men outside the control center. Immediately thereafter, a huge multi-colored surging cloud boiled to an altitude of over 40,000 feet. Clouds in its path disappeared. Soon the shifting substratosphere winds dispersed the now grey mass.

The test was over, the project a success.

The steel tower had been entirely vaporized. Where the tower had stood, there was a huge sloping crater. Dazed but relieved at the success of their tests, the scientists promptly marshalled their forces to estimate the strength of America's new weapon. To examine the nature of the crater, specially equipped tanks were wheeled into the area, one of which carried Dr. Enrico Fermi, noted nuclear scientist. Answer to their findings rests in the destruction effected in



INTER-OFFICE MEMORANDUM

DATE 5 September 1945

TO: File

FROM: Ralph Carlisle Smith

SUBJECT: Comments on Trinity Test Shot Trip.

my left eye almost immediately and watched the light climb upward. The light intensity fell rapidly hence did not blind my left eye but it was still amazingly bright. It turned yellow, then red, and then beautiful purple. At first it had a translucent character but shortly, turned to a tinted or colored white smoke appearance. The ball of fire seemed to rise in something of toadstool effect. Later the column proceeded as a cylinder of white smoke; it seemed to move ponderously. A hole was punched through the clouds but two fog rings appeared well above the white smoke column. There was a spontaneous cheer of the observers. Dr. Von Neumann said "that was at least 5000 tons and probably a lot more." My estimate of the width of the ball of fire was guessed to be 1 to 2 miles at that time. Someone said keep your mouth open and just then, about 1 1/2 to 2 minutes after the light flash, a sharp loud crack swept over us--it reverberated through the mountain like thunder. Several small flashes took place some distance from and after the big flash, apparently part of a measuring system. Commander Bradbury said that the cloud was up over 20,000 feet and still rising. The top of the cloud was moving slightly northeast and was being sheared off. At about 0555, we were aboard the buses and started home again. We stopped for relief on the road between Albuquerque and Santa Fe, we passed at Santa Fe (Closson & Closson) but did not dismount. We arrived at the Hill at about 1300 16 July 1945.

Ralph Carlisle Smith

Form 25

The entire cost of the project, representing the erection of whole cities and radically new plants spread over many miles of countryside, plus unprecedented experimentation, was represented in the pilot bomb and its parts. Here was the focal point of the venture. No other country in the world had been capable of such an outlay in brains and technical effort.

The full significance of these closing moments before the final factual test was not lost on these men of science. They fully knew their position as pioneers into another Age. They also knew that one false move would blast them and their entire effort into eternity. Before the assembly started a receipt for the vital matter was signed by Brigadier General Thomas F. Farrell, General Groves deputy. This signalized the formal transfer of the irreplaceable material from the scientists to the Army.

During final preliminary assembly, a bad few minutes developed when the assembly of an important section of the bomb was delayed. The entire unit was machine-tooled to the finest measurement. The insertion was partially completed when it apparently wedged tightly and would go no farther. Dr. Bacher, however, was undismayed and reassured the group that time would solve the problem. In three minutes time, Dr. Bacher's statement was verified and basic assembly was completed without further incident.

Specialty teams, comprised of the top men on specific phases of science, all of which were bound up in the whole, took over their specialized parts of the assembly. In each group was centralized months and even years of channelized endeavor.

On Saturday, July 14, the unit which was to determine the success or failure of the entire project was elevated to the top of the steel tower. All that day and the next, the job of preparation went on. In addition to the apparatus necessary to cause the detonation, complete instrumentation to determine the "pulse beat" and all reactions of the bomb was rigged on the tower.

The ominous weather which had dogged the assembly of the bomb had a very sobering affect on the assembled experts whose work was accomplished amid lightning flashes and peals of thunder. The weather, unusual and upsetting, blocked out aerial observation of the test. It even held up the actual explosion scheduled at 4 A.M. for an hour and a half. For many months the approximate date and time had been set and had been one of the high level secrets of the best kept secret of the entire war.

Nearest observation point was set up 10,000 yards south of the tower where in a timber and earth shelter the controls for the test were located. At a point 17,000 yards from the tower at a point which would give the best observation the key figures in the atomic bomb project took their posts. These included General Groves, Dr. Vannevar Bush, head of the Office of Scientific Research and

SECRET

July 24, 1945

Lt. Taylor

V. Weisskopf

EYE WITNESS ACCOUNT

32.2 Jornada

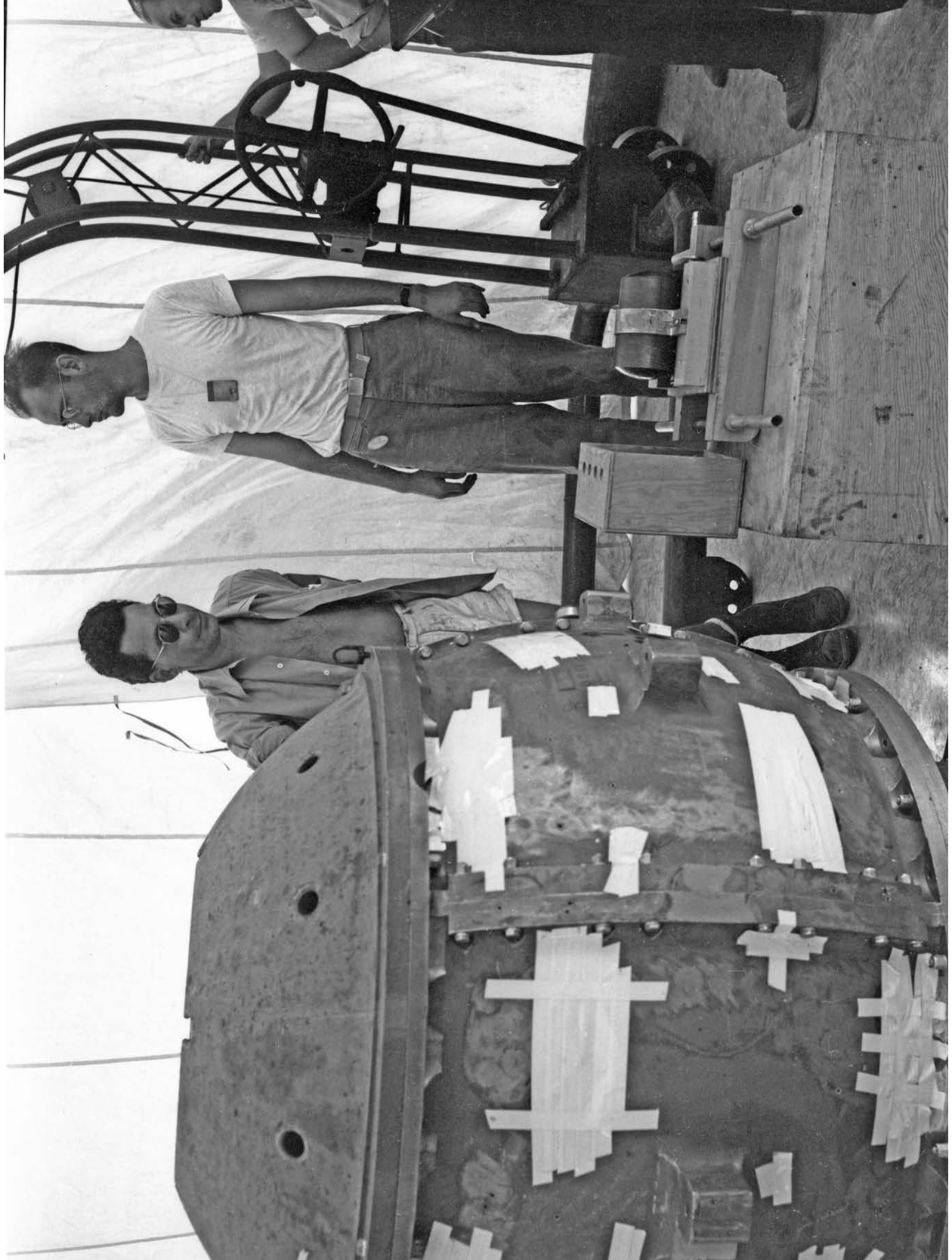
You have asked me to submit to you an eye witness account of the explosion. I was located at base camp and watched the phenomenon from a little ridge about 100 yds. east of the water tower. Groups of observers had arranged small wooden sticks at a distance of 10 yds. from our observation place in order to estimate the size of the explosion. They were arranged so that their distance corresponded to 1000 ft. at zero point. I looked at the explosion through the dark glass, but I have provided for an indirect view of the landscape in order to see the deflected light.

When the explosion went off, I was first dazzled by this indirect light which was much stronger than I anticipated, and I was not able to concentrate upon the view through the dark glass and missed, therefore, the first stages of the explosion. When I was able to look through the dark glass I saw flames and smoke of an estimated diameter of 1000 yds. which was slowly decreasing in brightness seemingly due to more smoke development. At the same time it rose slightly above the surface. After about three seconds its intensity was so low I could remove the dark glass and look at it directly. Then I saw a reddish glowing smoke ball rising with a thick stem of dark brown color. This smoke ball was surrounded by a blue glow which clearly indicated a strong radioactivity and was certainly due to the gamma rays emitted by the cloud into the surrounding air. At that moment the cloud had about 1000 billions of curies of radioactivity whose radiation must have produced the blue glow.

The first two or three seconds, I felt very strongly the heat radiation all over the exposed parts of my body. The part of my retina which was exposed to the indirect light from the surrounding mountains was completely blinded and I could feel traces of the after image 30 minutes after the shock.

The reddish cloud darkened after about 10 or 20 seconds and rose rather rapidly leaving behind a thick stem of dark brown smoke. After this, I remember having seen a white hemisphere rising above the clouds in continuation of the breakthrough of the explosion cloud through the ordinary cloud. level.

SECRET



WAR DEPARTMENT
WASHINGTON, D. C.

IMMEDIATE RELEASE

This release is prepared as background information on the test July 16 in the New Mexico desertlands when the first man-made atomic explosion was achieved. It is for use with the story of the Atomic Bomb Project.

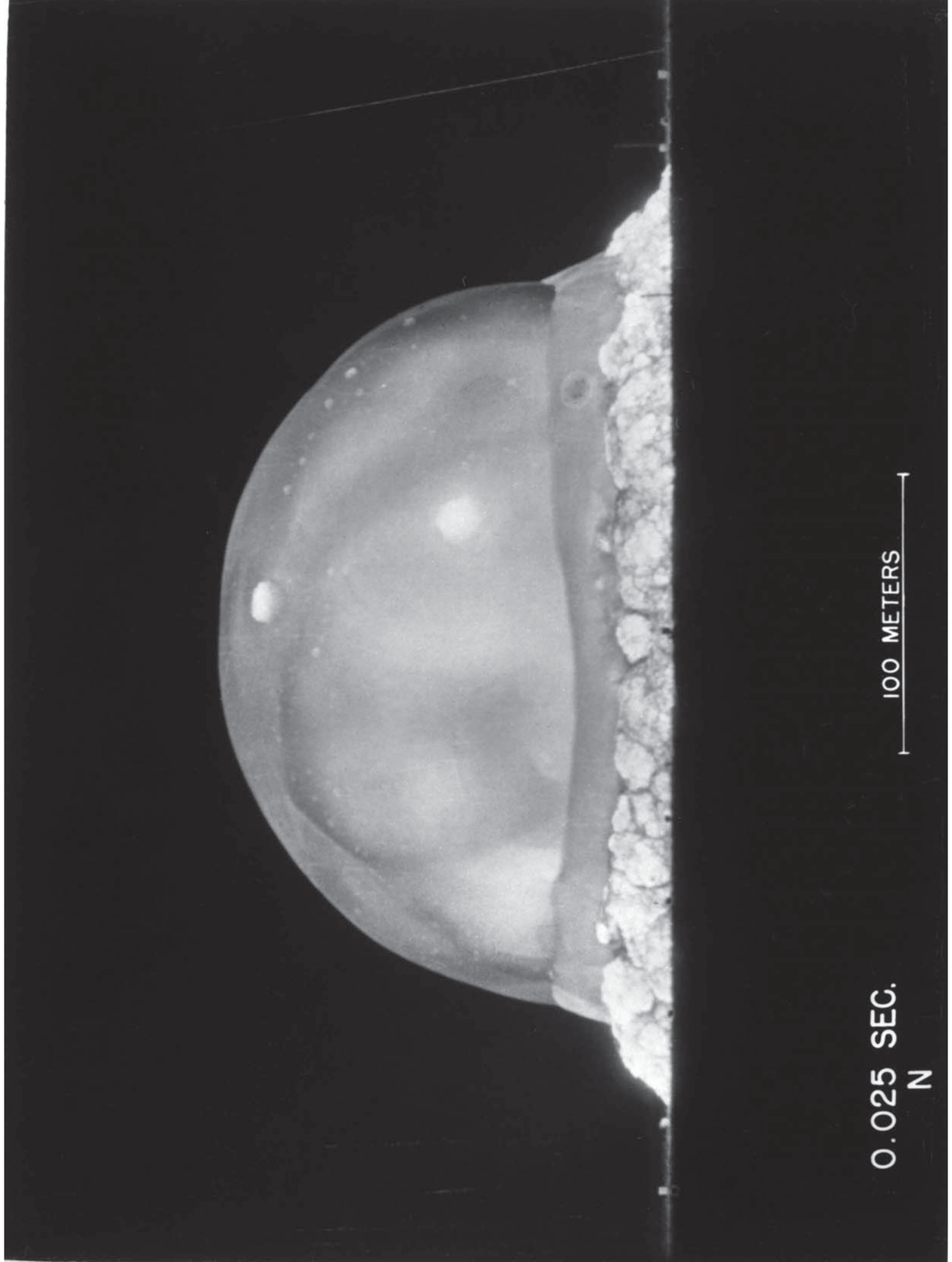
Mankind's successful transition to a new age, the Atomic Age, was ushered in July 16, 1945, before the eyes of a tense group of renowned scientists and military men gathered in the desertlands of New Mexico to witness the first end results of their $2,000,000,000 effort. Here in a remote section of the Alamogordo Air base 120 miles southeast of Albuquerque the first man-made atomic explosion, the outstanding achievement of nuclear science, was achieved at 5:30 A.M. of that day. Darkening heavens, pouring forth rain and lightning immediately up to the zero hour, heightened the drama.

Mounted on a steel tower, a revolutionary weapon destined to change war as we know it, or which may even be the instrumentality to end all wars, was set off with an impact which signalized man's entrance into a new physical world. Success was greater than the most ambitious estimates. A small amount of matter, the product of a chain of huge specially constructed industrial plants, was made to release the energy of the universe locked up within the atom from the beginning of time. A fabulous achievement had been reached. Speculative theory, barely established in pre-war laboratories, had been projected into practicality.

This phase of the Atomic Bomb Project, which is headed by Major General Leslie R. Groves, was under the direction of Dr. J. R. Oppenheimer, theoretical physicist of the University of California. He is to be credited with achieving the implementation of atomic energy for military purposes.

Tension before the actual detonation was at a tremendous pitch. Failure was an ever-present possibility. Too great a success, envisioned by some of those present, might have meant an uncontrollable, unusable weapon.

Final assembly of the atomic bomb began on the night of July 12 in an old ranch house. As various component assemblies arrived from distant points, tension among the scientists rose to an increasing pitch. Coolest of all was the man charged with the actual assembly of the vital core, Dr. R. F. Bacher, in normal times a Professor at Cornell University.



SECRET

The path of the shock wave through the clouds was plainly visible as an expanding circle all over the sky where it was covered by clouds.

After about 45 seconds the sound wave arrived and it struck me as being much weaker than anticipated.

V. Weisskopf

VW:jsh

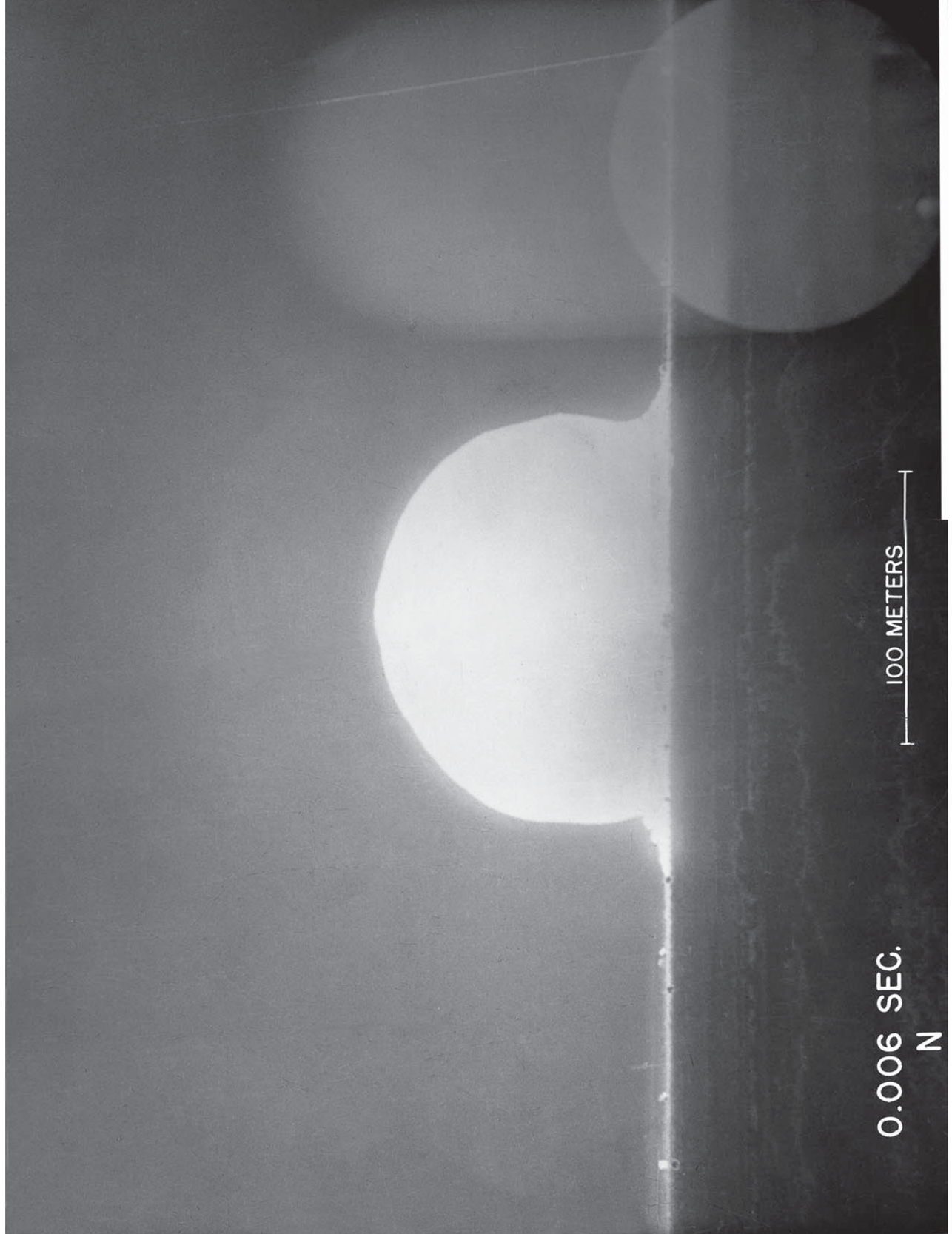
SECRET

He said there were several smaller explosions and placed the time at 5:30 a. m.

In Alamogordo, 10 miles from the base, Mrs. Tom Charles said the explosion had caused no particular comment and no damage so far as she knew.

Marckson's statement said "weather conditions affecting the content of gas shells exploded by the blast may make it desirable for the Army to evacuate temporarily a few civilians from their homes."

There is a civilian area on the Alamogordo reservation.



TRINITY
July 16, 1945
5:29:45 AM

by Marge Bradner

[For many of us this has been a year of reflection. The 50th anniversary of many significant events have occurred this past year the landing at of Normandy, VE Day, the explosion of the first Atomic Bomb… Marge Bradner was working at Los Alamos as that first atomic bomb was developed and exploded. Here is her account of what she experienced at that fateful time, a turning point in history. – Editor]

It was cold and dark and after midnight, July 16, 1945, when I arrived at the top of Sandia Mountain near Albuquerque with friends. Clouds were visible as occasional flashes of lightning appeared in the southern sky. A storm was brewing. A HUNCRED MILES AWAY key personnel and military were taking protective positions in bunkers at Base Camp near point zero. Brad [my husband] was with members of the Coordinating Council dug in on a barren knoll 20 miles from the detonation tower. The shot was set for 4 AM—would it be delayed? Would it be canceled due to the storm? How long should we wait?

While we waited, I reflected on my own participation in Project Y. Upon graduation from UC Berkeley, I had accepted a job at Los Alamos not knowing the exact location, who I would be working for, or what I would be doing. After a hot dusty drive from the barren whistle-stop at Lamy, New Mexico. I arrived at the sleepy old world town of Santa Fe. Low mudded adobe buildings surrounded the plaza where Indians in colorful costumes displayed jewelry and pottery. I checked the address, 109 Palace; it didn't seem possible that the office of an important government project would be found in an inner courtyard off a narrow side street with a small unobtrusive sign *US Engineers* over the door. Smiles greeted me, I was expected. Among the people I met that first day in New Mexico was Hugh Bradner. A two or three hour drive over rough dusty, washboard roads with sharp switch backs led to the top of a Mesa which would be my home for the next two and a half years. My various jobs and activities at Los Alamos included putting Dr. Oppenheimer on the payroll, seeing the first plutonium sample—a bit of slurry in the bottom of a test tube—helping pack high explosives around a metal core for the early implosion experiments.

Security was tight at Los Alamos. The project was surrounded by a barbed-wire fence and patrolled by mounted police. We were not allowed to travel any distance or make friends with local people. Instead of a name, we had a number to identify our driver's license, and we paid our income tax by number. All outgoing and incoming mail was censored, the only time this had ever happened in the continental United States. Three armed guards patrolled the grounds around a picturesque adobe home when Brad and I were married in Santa Fe, late summer 1943.

The scheduled time for detonation had come and gone. How much longer should we wait? The dim light of dawn was beginning to show along the eastern horizon. We were preparing to leave our lookout at the top of the mountain when suddenly… for a fraction of a second the entire sky lit up in a terrestrial brilliance that surpassed our wildest expectations. The clarity of each tree, rock and crevasse stood out in minute detail. This was followed by a broiling colorful fireball rising into the atmosphere that reminded me of a pot of varicolored fudge boiling, churning, belching, almost out of control. Then the mushroom cloud formed and extended into the heavens. Words cannot describe the emotions, joys and fears that filled all of us who witnessed this first atomic bomb in the New Mexico desert. The spectacle was tremendous, beautiful, magnificent, terrifying, exciting, humbling, scary. Shortly thereafter the shock wave thundered by shaking the car and our bodies and then silence.

The sun rose at the appropriate hour. Another day had begun. It was the first dawn of the Atomic Age.

IN MEMORIAM

Rebecca E. Lytle
1947-1995

Memorial services were held April 30 for Rebecca Lytle, a much loved Oceanid who died of ovarian cancer in early April. Those who knew her, loved her and are saddened by her untimely loss. The obituary which appeared in the San Diego Union-Tribune on April 12, spoke of her great service to others during the last years of her life. Forced by her illness to give up her occupation as art editor for Harcourt Brace and Jovanovich (a publishing firm) in 1991, Rebecca devoted herself to making a difference in the lives of others. "It is ironic," she wrote recently, "that losing my occupation has helped me to rediscover my grandmother's advocation for service."

Working as a tutor at READ/San Diego, an adult literacy project, Rebecca made a tremendous impact on the lives of many. She also wrote extensively, completing a piece called "Slow and Steady" about teaching Sandy Fowler, a 33 year-old San Diegan to read. She was editor of the *Diversity, Justice & Imagination* newsletter at UCSD.

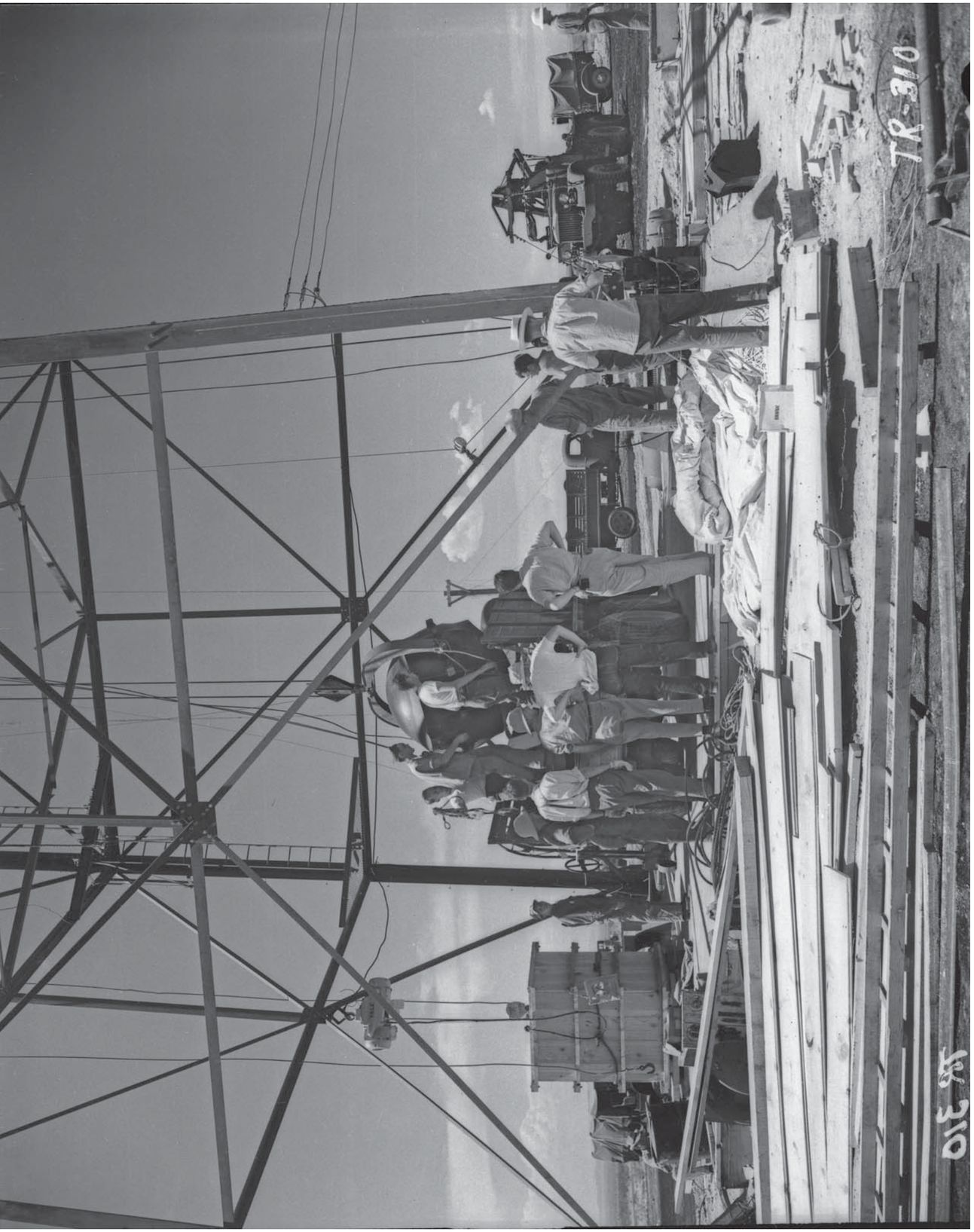
In 1993, while in remission, Rebecca began working in a child abuse prevention program at Children's Hospital. Diana Champion, director of Children's Hospital home visitor programs, said "Rebecca has been an inspiration for everyone… She was a role model for all of our staff and a wonderful example of what a caring person can do."

Born in Providence, R.I., Rebecca came to San Diego in the early 1970s to complete her master's degree in art history at San Diego State University. She joined Harcourt Brace, Jovanovich publishing house in 1978. In 1979 she was hired to develop the San Diego Museum of Art's *Archive of San Diego Art* project and its catalog of American paintings.

Rebecca is survived by her husband Cecil Lytle, a music professor and provost of Thurgood Marshall College; her daughter, Kelly Anne Lytle, a senior at UCSD; son Eric, of Los Angeles; sister Susan Davison, of La Vale, MD.; and her father, Ivan Stamper, of Nazareth, PA.

The family suggests donations to the San Diego Wellness Community, San Diego Hospice, & the Center for Child Protection at San Diego Children's Hospital.

Rebecca Lytle's name will be aded to our Garden Plaque at the International Center outside the Oceanid Pavilion.



322
Trinity

ALAMOGORDO BASE
EXPLOSIVES BLAST
JOLTS WIDE AREA

**Windows at Gallup,
255 Miles Away Rattle;
No Loss of Lives**

By the Associated Press

Following a blast felt over hundreds of miles Monday morning, explosion of "a considerable amount of high explosive and pyrotechnics" in a remote area of the Alamogordo air base reservation was reported by Col. William O. Bareckson, commandant.

Although the blast rattled windows 255 miles away at Gallup in northwestern New Mexico, Col. Bareckson said there were no loss of life or injury to anyone.

"Property damage outside of the explosives magazine itself was negligible," the commandant reported.

Reports from over the state listed the blast variously as an earthquake, meteor and air plane crash.

Members of the crew and passengers aboard a Santa Fe railway train near Mountainair thought they saw a bomber explode and burn in the sky.

So brilliant was the flash from the explosion Miss Georgia Green of Socorro, blind University of New Mexico student, exclaimed "What's that."

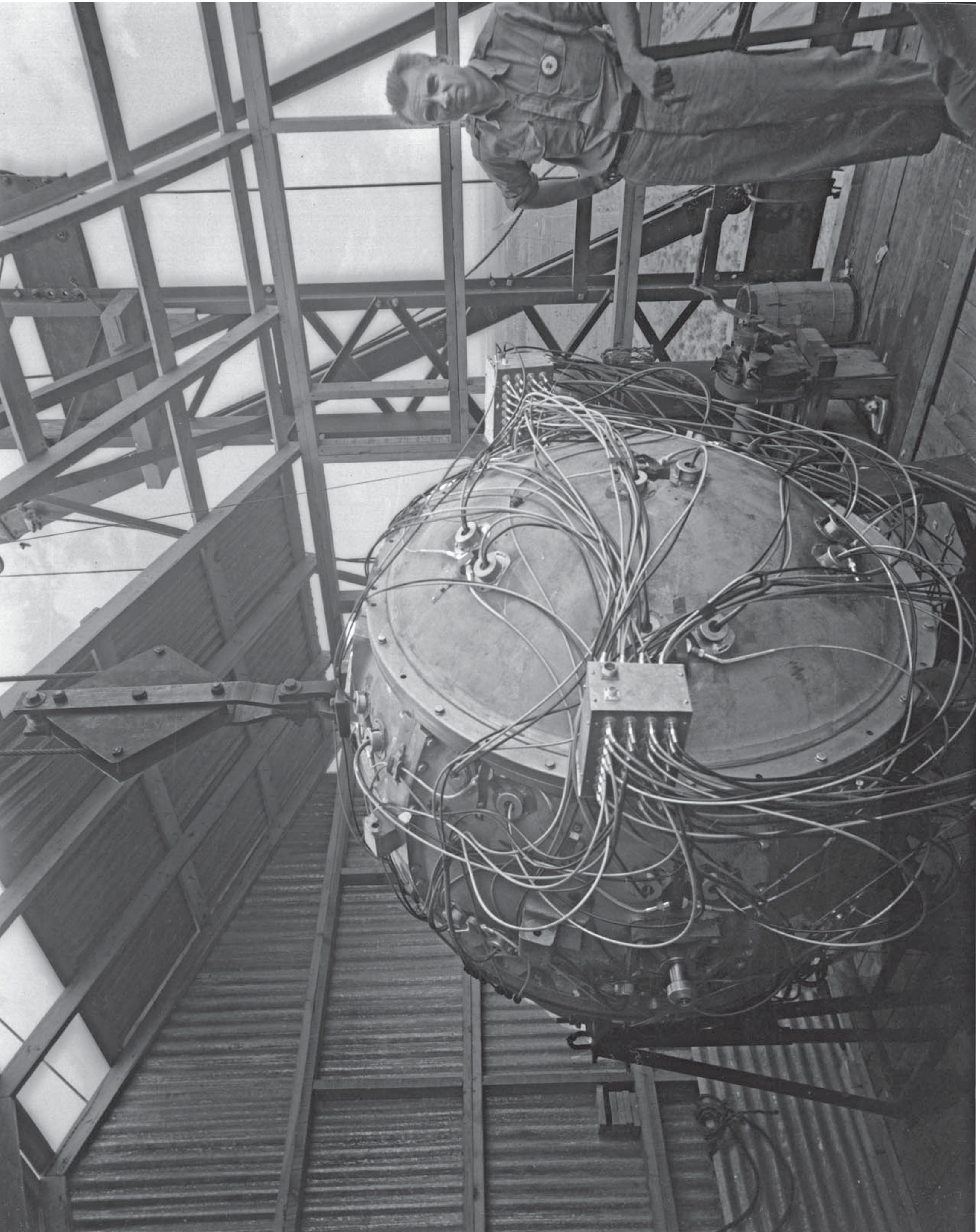
She was being driven to Albuquerque by her brother-in-law Joe Willis, Socorro theater operator.

The flash "lighted up the sky like the sun," Willis said. "The light lasted several moments, followed by a large crimson light to the southeast. We drove down the road several minutes before we heard the explosion."

Albuquerque is 150 miles from Alamogordo.

Gallup residents reported their windows were rattled by two explosions at about 5:45 a.m. Officials at the nearby Gingate ordnance depot reported they knew of no blast there.

At Silver City, 155 miles west of Alamogordo, the windows rattled and at a tower on Lookout Mountain near Beaverhead, northwest of Silver City, Forest Ranger Ray Smith said he saw a flash or fire followed by a violent explosion and smoke in the direction of Alamogordo.



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322
Trinity

EVACUATION DETACHMENT AT TRINITY

I. Detachment, Equipment, Personnel, Organization, Base Operations.

A. Equipment and Personnel.

This detachment consisted of 140 enlisted men, 4 officers, 140 vehicles, including one 500 gallon improvised water tank for drinking purposes, 2 lister bags, latrine flies, 30 pyramidal tents, 1000 type "C" and "K" rations, coffee, sugar, milk, and three field ranges.

B. Organization.

The detachment was formed into four platoons of nine vehicles each. The first and second platoons made up the first section under the Command of Captain Huene. The third and fourth platoons made up the second section under the Command of First Lieutenant H. Miller. Each vehicle had a driver and two men; three jeeps, under the direct supervision of the detachment Commander to act as messengers; one two-way radio vehicle.

C. Operating Base.

The detachment moved into its bivouac area 14 July. For security reasons this area was 40 miles from Trinity; the detachment remained there until the morning of 15 July, then moved to a semi-permanent Base Camp, with an alternate base site selected. The Base Camp was set-up as a company; latrine dry flies put up; lister bags hung, and field ranges set-up. The rest of the day and night was spent in briefing the men and having the section leaders and drivers familiarize themselves with the roads and dwellings in their assigned sections, and visiting Trinity headquarters for instructions. The Base Camp was approximately nine miles from Zero. The detachment Commander returned to Bas e Camp from Trinity around mid-night 15 July with last minute instructions. Major Miller was assigned the radio vehicle and put in Command of the Base Camp. The detachment was alerted in case the wind shifted in that direction, so it could move quickly to the alternate site.

D. Operations.

The orders received by the detachment Commander from General Farrell were generally as follows:

1. The two prepared press releases were made known to the detachment Commander. One in case of no evacuation, which stated briefly that an ammunition dump had blown up; and one in case of evacuation, which stated that an ammunition dump had blown up which contained gas shells and the people would be evacuated for 24 hours to protect them from the gas.

2. The detachment Commander would work with Mr. Hoffman and Mr. Herschfelter, with their crew of monitors, and was to evacuate upon Mr. Hoffman's request.

The detachment Commander planned, in case of evacuation, to set-up the Base Camp as a shelter for the people; tents and shelters would be provided

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to cover and feed 450 people for two days. This was ample shelter for the small population centers that were close enough to be in immediate danger. The larger centers were some distance away and there was ample time to transport them to Alamogordo Air Field and house them in barracks. In cases of one or two families , it was planned to send them to a hotel in a near-by town.

The area in the vicinity of the shot was divided into sections and each section leader was responsible for his section, with additional help if needed.

A jeep was assigned to Trinity headquarters, Major Miller at Base Camp, and to the detachment Commander during the operation, to supplement radio communications.

Immediately after the shot, the wind drift was ascertained to be sure the Base Camp was not in danger. Monitors were immediately sent out in the direction of the cloud drift to check the approximate width and degree of contamination of the area under the cloud. A small headquarters was set-up at Bingham, near the center of the area in the most immediate danger. The monitors worked in a wide area from this base reporting in to Mr. Hoffman or Mr. Herschfelter. One re-enforced platoon, under Captain Huene, was held at Bingham; the rest of the detachment was held in reserve at Base Camp. Fortunately, no evacuations had to be made.

Mr. Hoffman released the detachment about 1300 hours 16 July; by that time, any danger of serious contamination had passed.

The detachment Commander would like to take this time to say that the Officers and men of the detachment were alert, obedient, and conducted themselves in a superior manner throughout the experiment.

T.O. PALMER, JR.
Major, C.E.
Detachment Commander